

What is claimed is:

**IN THE CLAIMS:**

Please amend claims 27-49 and add claims 50-54 as follows:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Currently Amended)     A Method for determining athe number of receptors on a carrier, comprising the steps of:

- (a) preparing a carrier;
- (b) immobilizing at least one receptor on the carrier, with the receptor having the ability to interact with a ligand ~~and~~ to form a receptor-ligand complex;
- (c) after immobilization of ~~at the~~ at least one receptor on the carrier, bringing a marker in contact with the receptor; ~~in order to~~ form a receptor-marker complex with separable binding between the receptor and the marker; and
- (d) determining the number of the receptors on the carrier by detecting the receptor-marker complexes;

wherein the receptor-marker complexes are detected independently of receptor-ligand complexes.

28. (Currently Amended)     The method of claim 27, further comprising the step of:

- (i) bringing the receptor in contact with a test sample that is to be examined for its content of ligands.

29. (Currently Amended) The method of claim 28, further comprising the step of:

(ii) following step (i), detecting the receptor-ligand complexes.

30. (Currently Amended) The method of claim 27, wherein the carrier is a semiconductor with a surface comprised of a material from the group comprising silicon, semimetal oxides, including especially  $\text{SiO}_x$ , and aluminum oxide.

31. (Currently Amended) The method of claim 27, wherein the receptor is selected from the group consisting of comprising antibodies, especially including monoclonal or polyclonal antibodies; and functional fragments thereof; proteins, oligo- and polypeptides, nucleic acids; including especially DNA, RNA, cDNA, PNA, oligo- and polynucleotides; and as well as saccharides; especially including mono-, di-, tri-, oligo-, and polysaccharides.

32. (Currently Amended) The method of claim 27, wherein at the binding between the receptor and the ligand in the receptor-ligand complex is separable.

33. (Currently Amended) The method of claim 27, wherein at the binding between the receptor and the ligand in the receptor-ligand complex has a half-life in at the range of at least microseconds.

34. (Currently Amended) The method of claim 27, wherein n markers or a multiple of n markers are associated with n receptors.

35. (Currently Amended) The method of claim 27, wherein the marker comprises ~~has~~ reactive

groups, especially thiol groups.

36. (Currently Amended) The method of claim 27, wherein the marker comprises a dye from the group comprising a luminescent dye, a chemoluminescent dye, a photoluminescent dye, and/or a bioluminescent dye.

37. (Currently Amended) The method of claim 27, wherein the marker comprises a fluorescent dye, from the group comprising preferably a fluorochrome, and with greater preference a rhodamine, and especially tetramethylrhodamine isothiocyanate.

38. (Currently Amended) The method of claim 27, wherein the receptor comprises inherent fluorescence.

39. (Currently Amended) The method of claim 38, wherein the inherent fluorescence is provided by amino acid tryptophan ~~provides the inherent fluorescence.~~

40. (Currently Amended) The method of claim 38, wherein the binding between the receptor and the marker in the receptor-marker complex has a fluorescence half-life in at the range of nanoseconds.

41. (Currently Amended) The method of claim 27, wherein the receptor-marker complex includes fluorescence resonance energy transfer.

42. (Currently Amended) The method of claim 41, wherein the fluorescence of the fluorescence

resonance energy transfer is modified by ~~an~~the interaction of the ligand with the receptor.

43. (Currently Amended) The method of claim 41, wherein the receptor has ~~a~~the donor and ~~an~~the acceptor of the fluorescence resonance energy transfer.

44. (Currently Amended) The method of claim 41, wherein the fluorescence is produced by ~~a~~the donor ~~and~~ the fluorescence is quenched by ~~an~~the acceptor.

45. (Currently Amended) The method of claim 41, wherein the ligand acts as ~~a~~the donor of the fluorescence resonance energy transfer.

46. (Currently Amended) The method of claim 41, wherein the ligand brings ~~a~~the donor and ~~an~~the acceptor of the fluorescence resonance energy transfer directly into contact.

47. (Currently Amended) The method of claim 41, wherein fluorescence-labeled ligands are used.

48. (Currently Amended) The method of claim ~~42~~27, wherein the marker is a microparticle.

49. (Currently Amended) A method ~~for~~of determining ~~a~~the number of receptors~~—using a biosensor, comprising the steps of:~~

(a) preparing a semiconductor carrier;

(b) immobilizing at least one receptor on the carrier, with the receptor having the ability to



interact with a ligand ~~and~~ to form a receptor-ligand complex;

(c) after immobilization of at the at least one receptor on the carrier, bringing a marker in contact with the receptor, ~~in order~~ to form a receptor-marker complex with separable binding between the receptor and the marker; and

(d) determining the number of receptors on the carrier by detecting the receptor-marker complexes;

wherein the receptor-marker complexes are detected independently of receptor-ligand complexes, the marker comprising ing a luminescent dye, a chemoluminescent, a photoluminescent dye, or a bioluminescent dye.

50. (New) A method for determining a number of receptors on a carrier, comprising the steps of:

- immobilizing a receptor on the carrier;
- bringing a marker in contact with the receptor to form a receptor-marker complex;
- detecting the receptor-marker complexes; and
- determining the number of the receptors on the carrier from the detected receptor-marker complexes.

51. (New) The method of claim 50, comprising preparing the carrier prior to the step of immobilizing.

52. (New) The method of claim 50, where the step of bringing a marker in contact with the receptor to form a receptor-marker complex is performed prior to the step of immobilizing a receptor on a carrier.

53. (New) The method of claim 50, where the steps of immobilizing a receptor on the carrier and bringing a marker in contact with the receptor to form a receptor-marker complex are performed at the same time in a single step.

54. (New) The method of claim 50, further comprising the steps of bringing the receptor in contact with a test sample to be examined for its content of ligands, and detecting receptor-ligand complexes.